Bellcomm

955 L'Enfant Plaza North, S.W.
Washington, D. C. 20024

B72 03004

date: March 3, 1972

to: Distribution

from: G. S. Taylor

subject: Additional Computer-Generated Panoramas of the Descartes Terrain and an Index to All Available Scenes -- Case 310

ABSTRACT

Additional computer-generated views of the terrain visible from positions in the region of Apollo 16 surface activities including a panorama from the nominal landing site are published to supplement the previous set: "Computer-Generated Panoramas of the Descartes Terrain from Various Traverse Stops." The viewing positions for these and all previously published scenes are displayed on the topographic map of the Descartes region where they may be referenced to the anticipated traverses by the astronauts. In addition, the areas from which the LM is visible are shown.

date: March 3, 1972

to: Distribution

from: G. S. Taylor

subject: Additional Computer-Generated Panoramas of the Descartes Terrain and an Index to all Available Scenes -- Case 310

MEMORANDUM FOR FILE

Computer-generated scenes as viewed by an astronaut standing at various positions in the region of the Descartes landing site are presented to supplement those found in Reference 1. The viewing positions are displayed on a contour map to allow a determination of their positions relative to the traverses. These scenes were generated by processing a digitized form of the U. S. Army TOPOCOM compilation of the terrain contours in the Descartes landing area. In the foreground out to 200 meters from the observer, the terrain features are depicted with 5 by 5 meter grid lines; from 200 meters to the horizon a 50 by 50 meter grid is used.

Reference Contour Map

Figure 1 is the contour map of the Descartes region from which the digitized data in the area of the surface activities were compiled. Displayed on this map and represented by letters are the positions from which the computer-generated scenes originate. In addition, the approximate traverses (as of 2-25-72) and the scheduled station stops are also shown. The panorama from the LM position is scene N.

The shaded region on the map represents those areas from which the LM is expected to be visible.

Scenes A, B, C, and D shown on the map can be seen in Reference 1.

Scene E (Figure 2)

This 360° panorama represents the viewable terrain as seen from a position west of Palmetto crater and north of the large ridge that lies north of the landing site. Dome Mountain and the Smoky Mountains to the north are easily viewable. A portion of Ravine crater can be seen at 45°. To the

south Stone Mountain and a large peak at 185° dominate the view. The cliff seen at 310° is due to a mismatch at the interface between data bases and is not a real physical feature.

Scene F (Figure 3)

Stone Mountain will be the dominant feature visible by the astronauts at this position. Additional horizon features that are evident to the south are a peak at 195° and a flat-topped peak at 225°. To the north Dome Mountain and the Smoky Mountains can be seen. The panorama also gives a feeling for the visible horizon features should the actual LM landing occur south of the designated landing site.

Scene G (Figure 4)

This panorama is generated from a position about 20 meters from the edge of North Ray crater. Although the observer position is not close enough to the edge of the crater to allow a view of the bottom, a small portion of the crater can be seen at 335°. To the north lies Dome Mountain with the Smoky Mountains dominating the view to the northeast. Stone Mountain and the aforementioned sharp peak can be seen in the south. At 120° a distinct peak that has not been visible in prior views is seen.

Scene H (Figure 5)

This scene depicts the view that the astronaut would see looking north from a high point on the ridge to the north of the landing site. This view assumes that the astronaut is looking at -1°±30°. Dome Mountain and the Smoky Mountains are easily distinguished. North Ray crater is hidden by the higher terrain that surrounds it and thus will not be visible until reaching its edge. A significant landmark which could be used as a guide to the crater is Dome Mountain.

Scene I (Figure 6)

This scene represents the view from the high point directly east of Palmetto crater. The viewing direction is again -1°±30°. The position from which this scene is generated is slightly west of the planned traverse. It shows a shift in the relative orientation between Dome Mountain and the Smoky Mountains from that of Scene H. It is evident that if the traverse is too far east, the Smoky Mountains will obscure Dome Mountain. Thus, keeping Dome Mountain in view will assure the astronauts that they are not east of their planned traverse.

Scene J (Figure 7)

This scene serves as a supplement to Scene F since it is viewed from a position a short distance west of the traverse. The viewing angle is 185°±30°. Stone Mountain and the sharp southern peak again dominate the view. The left side of the scene shows one of the many ridges that the astronauts will encounter on all their traverses.

Scene K (Figure 8)

If the LM lands north of the prime landing site, this scene represents the terrain the astronauts will encounter. The most significant feature is the blockage of a large portion of Stone Mountain by the ridge to the south. A high point on the ridge (from the top of which Scene H is generated) completely obscures the sharp southern peak that is evident in other views. To the north the upper portions of the Smoky Mountains can be seen but a nearby ridge obscures Dome Mountain. As indicated by the contour map, the origin of this scene is in a large depression which causes the blockage. Thus, if an off-nominal landing occurs in this region, few of the general traverse objectives will be visible prior to leaving the LM site.

Scene L (Figure 9)

The 360° panorama from an off-nominal landing site that is one kilometer downrange is shown in this scene. To the south, Stone Mountain, the sharp peak, and the flat-topped peak are visible. At 135° a small hill that is located slightly west of Spook crater blocks the horizon. To the north a ridge is evident, but blocks only the lower portion of the northern mountains.

Scene M (Figure 10)

This 360° panorama represents the view from an off-nominal landing site that is one kilometer short of nominal. The sharp southern peak is almost hidden from view behind Stone Mountain. The flat-topped peak is lower on the horizon at 220°. The views to the north, east, and west are blocked by nearby ridges, thus preventing any additional landmarks to be seen.

Scene N - View from LM (Figure 11)

The view from the nominal landing site is displayed in this panorama. From 270° through 0° to 100° the scene is

limited to the nearby terrain and, except for a small portion of the Smoky Mountains visible between 10° and 15°, no significant features are seen. To the south Stone Mountain and the sharp peak are easily identifiable. The blank spot in the side of the mountain to the southeast is due to another mismatch in the data bases. Thus, the nominal landing site will be characterized by good visibility to the south and southwest with large ridges blocking the view in other directions.

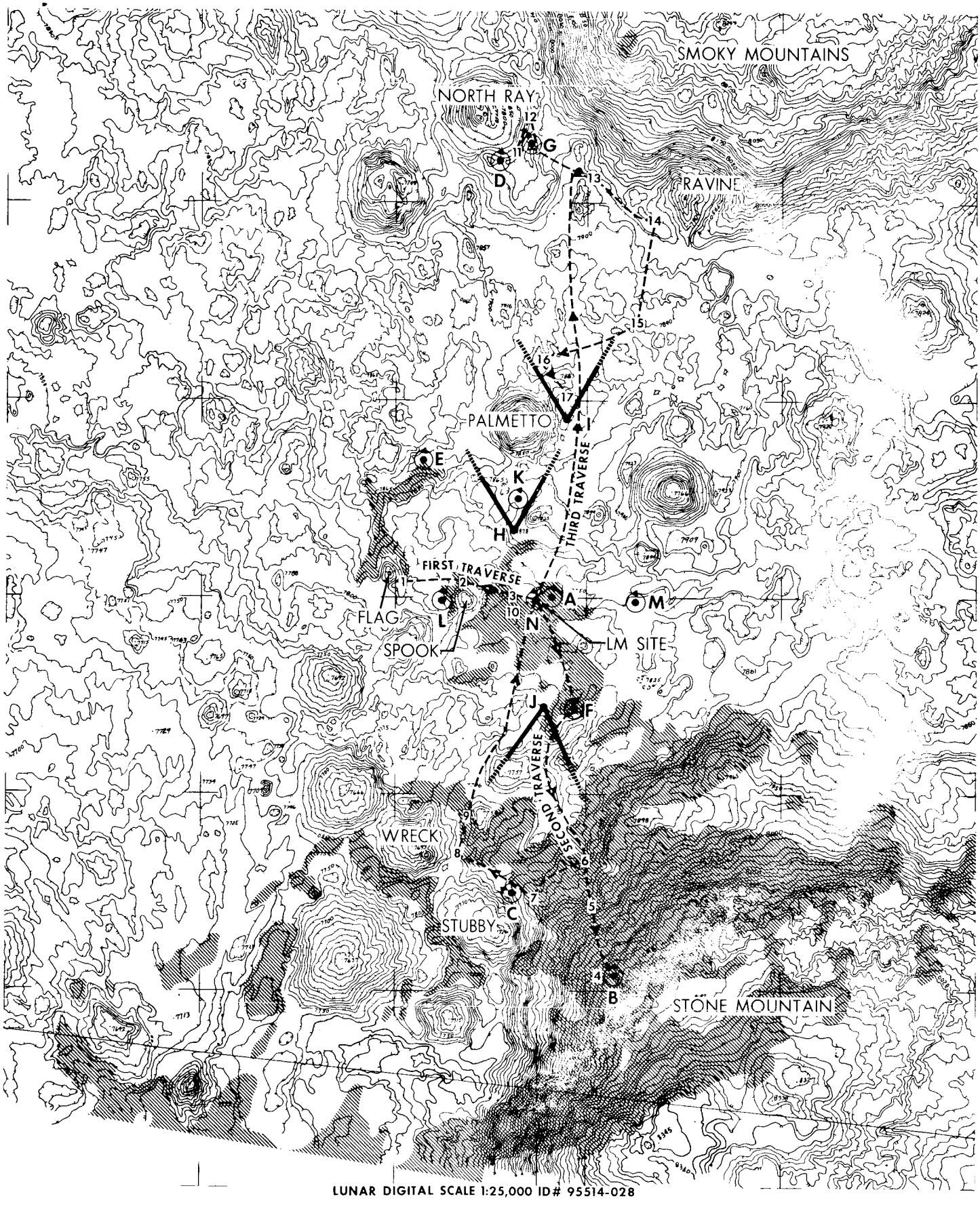
G. S. Taylor

2013-GST-jab

Attachments
Figures 1 through 11

REFERENCE

1. "Computer-Generated Panoramas of the Descartes Terrain from Various Traverse Stops," Bellcomm Memorandum for File B71 12017, R. A. Bass, K. E. Martersteck, G. S. Taylor and S. C. Wynn, December 27, 1971.



LUNAR DIGITAL SCALE 1:25,000 ID# 95514-028

LEGEND:

LETTERS INDICATE TOPORAMA SCENES

⊙ INDICATES 360° PANORAMA

NUMBERS INDICATE PLANNED TRAVERSE STOPS AS OF 2-25-72

▨ REGION FROM WHICH LM IS VISIBLE

FIGURE 1

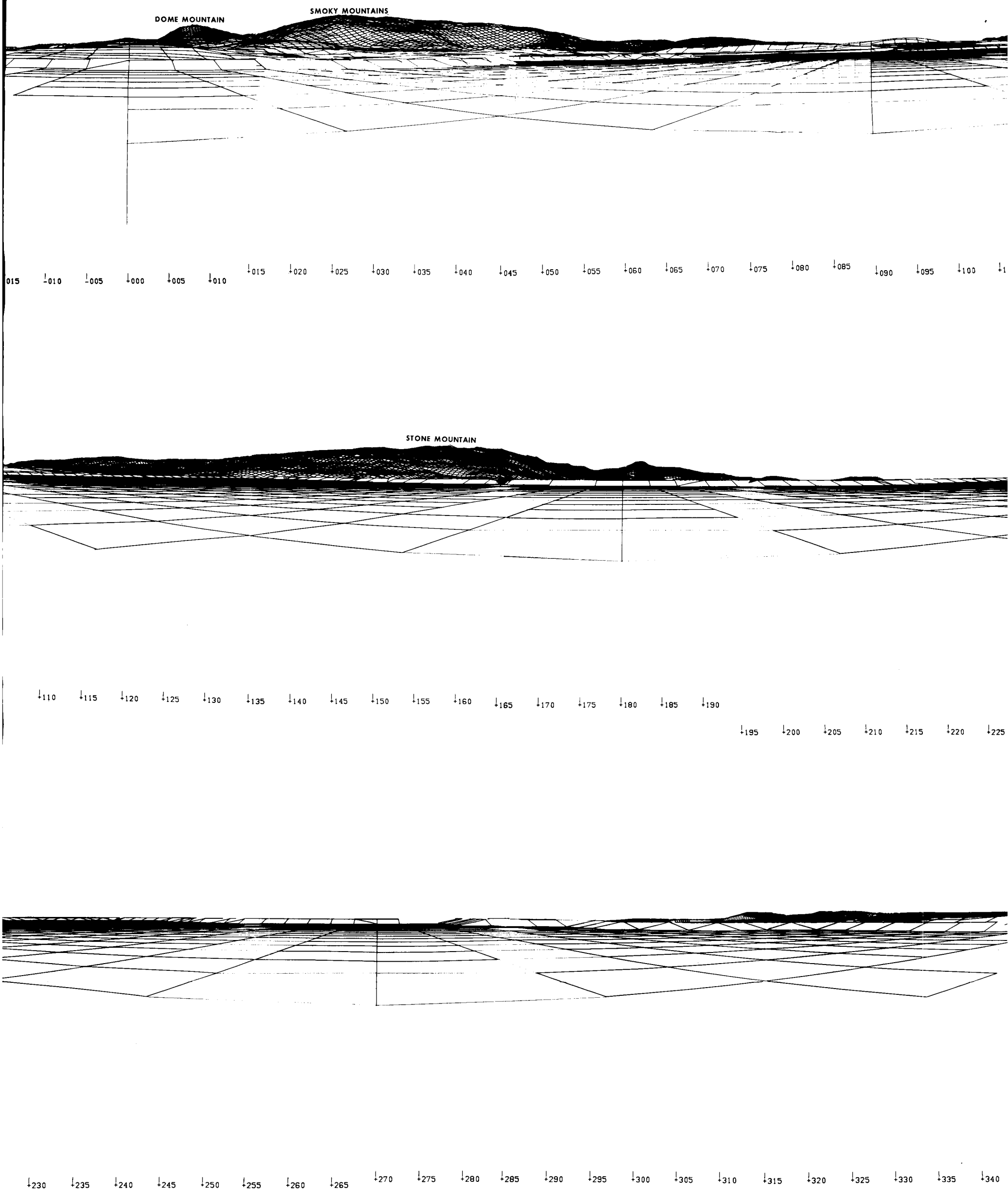


FIGURE 2 - VIEW FROM WEST OF PALMETTO CRATER (SCENE E)

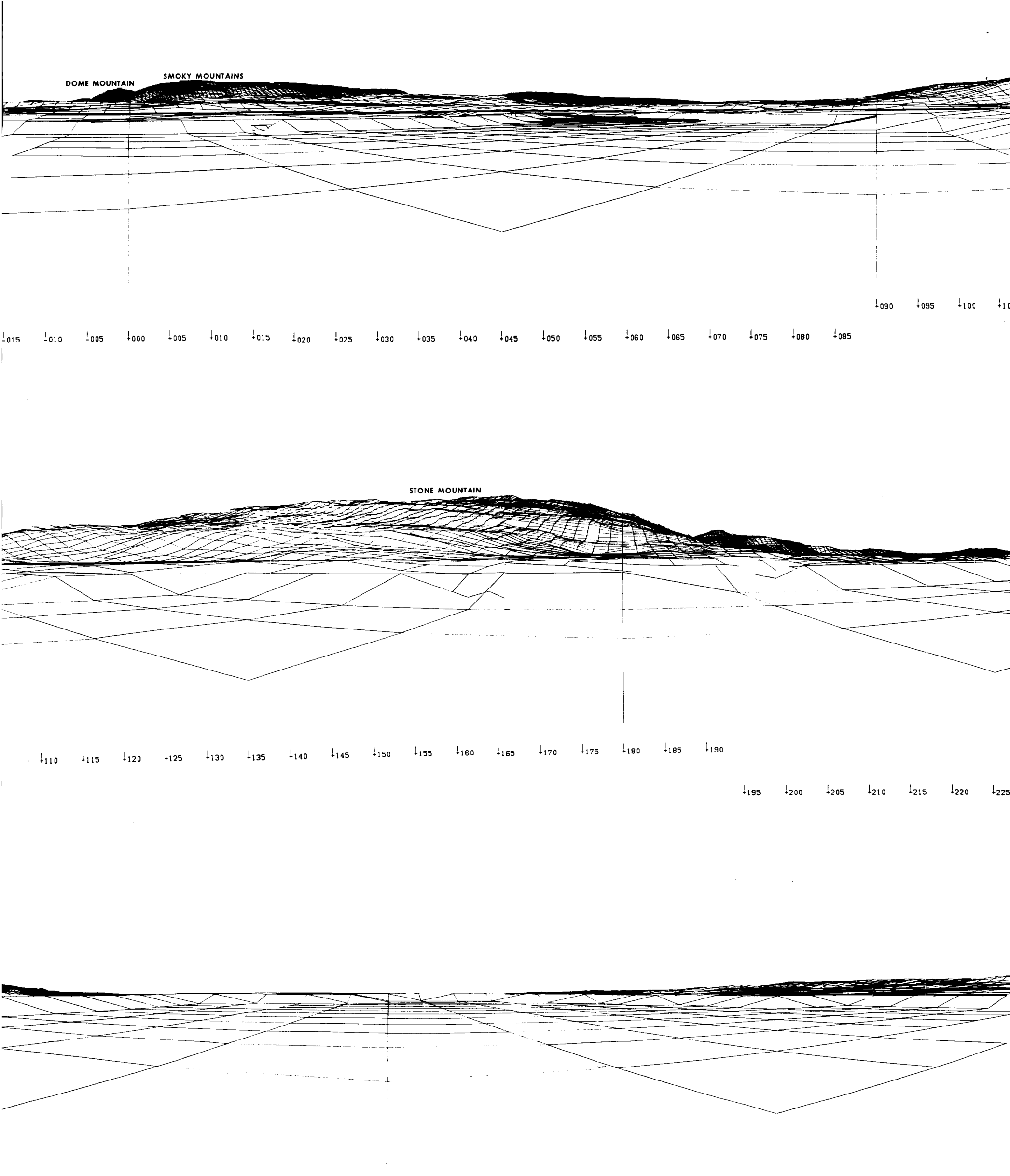


FIGURE 3 - VIEW FROM SOUTH OF LANDING SITE (SCENE F)

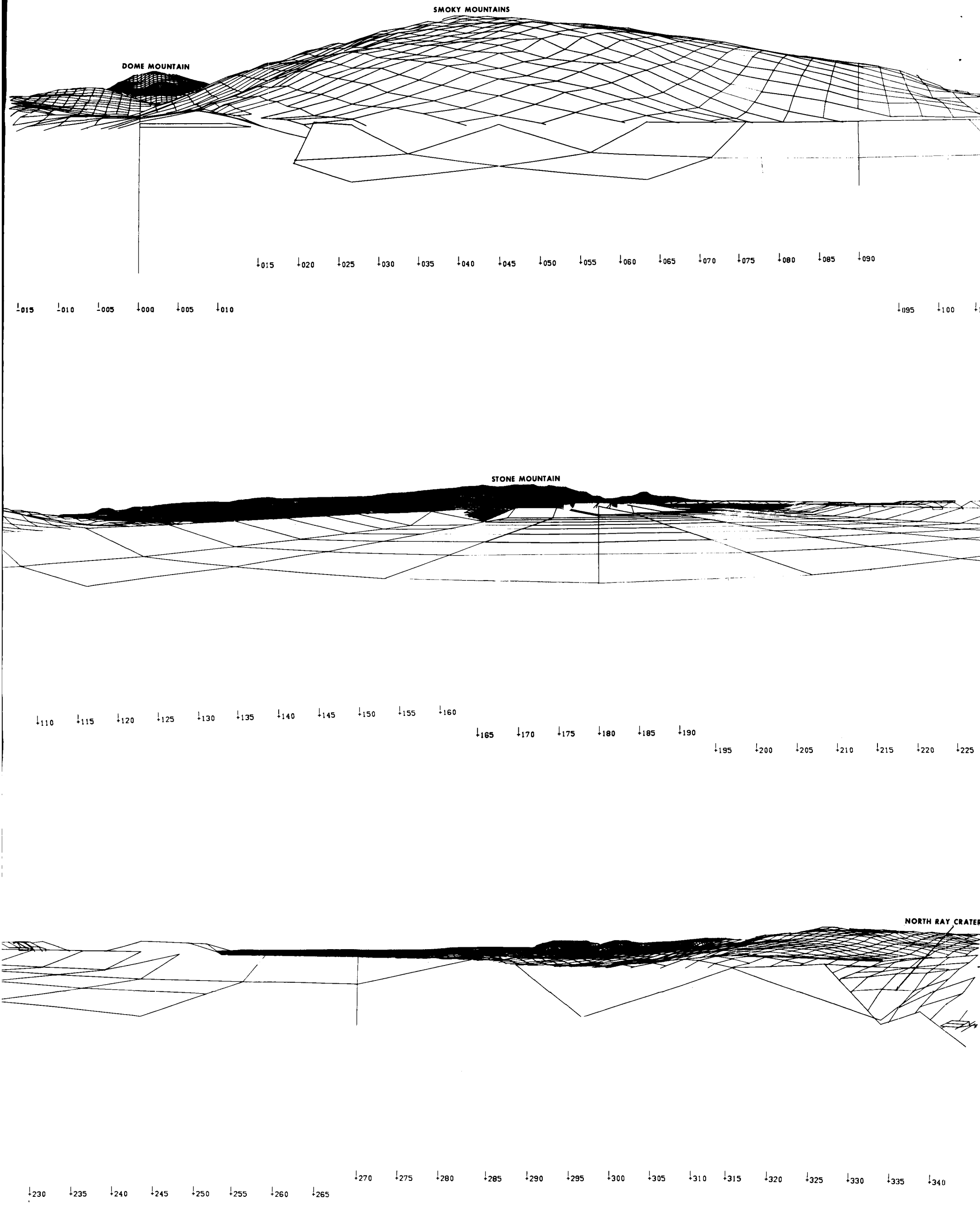


FIGURE 4 - VIEW FROM REGION OF NORTH RAY CRATER (SCENE G)

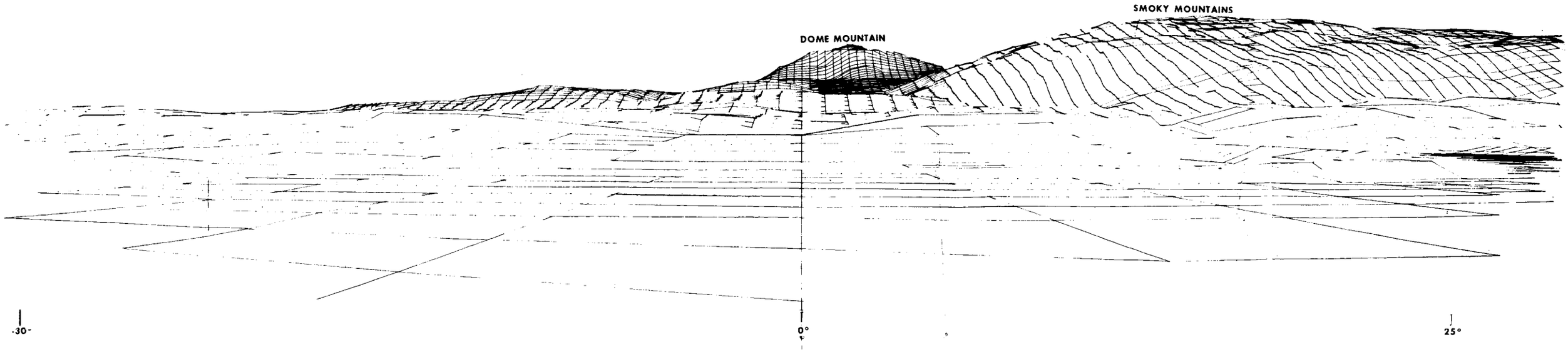


FIGURE 5 - VIEW FROM RIDGE NORTH OF LANDING SITE (SCENE H)

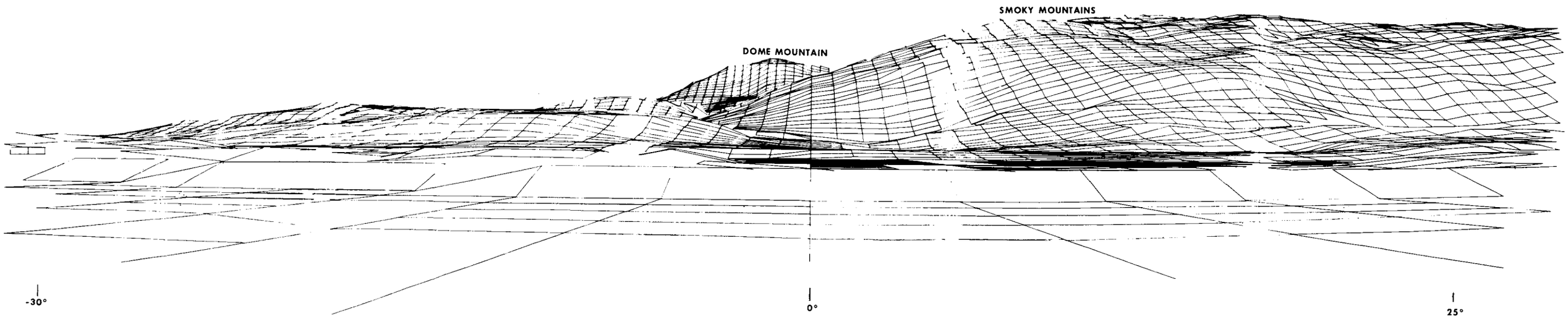


FIGURE 6 - VIEW FROM EAST OF PALMETTO CRATER (SCENE I)

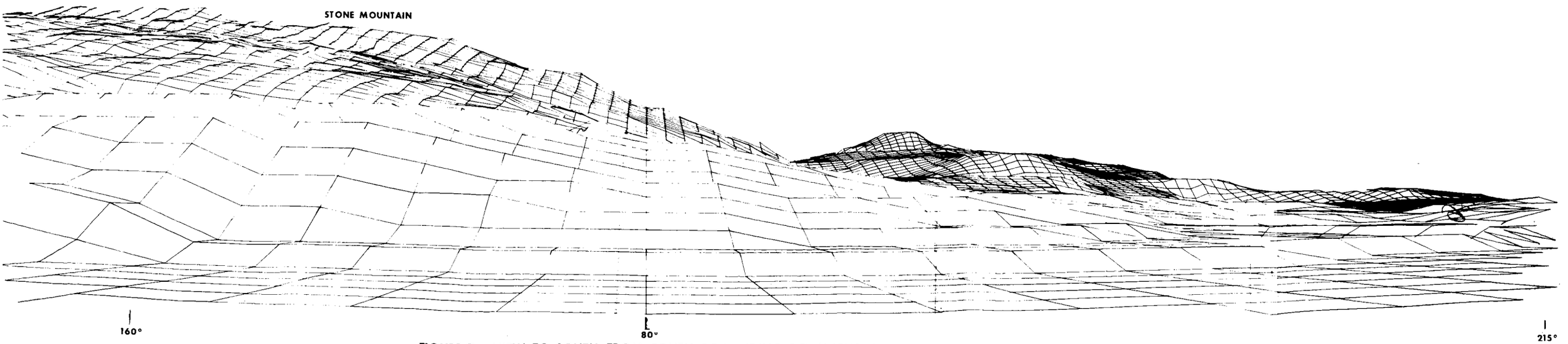


FIGURE 7 - VIEW TO SOUTH FROM SOUTH OF LANDING SITE (SCENE J)

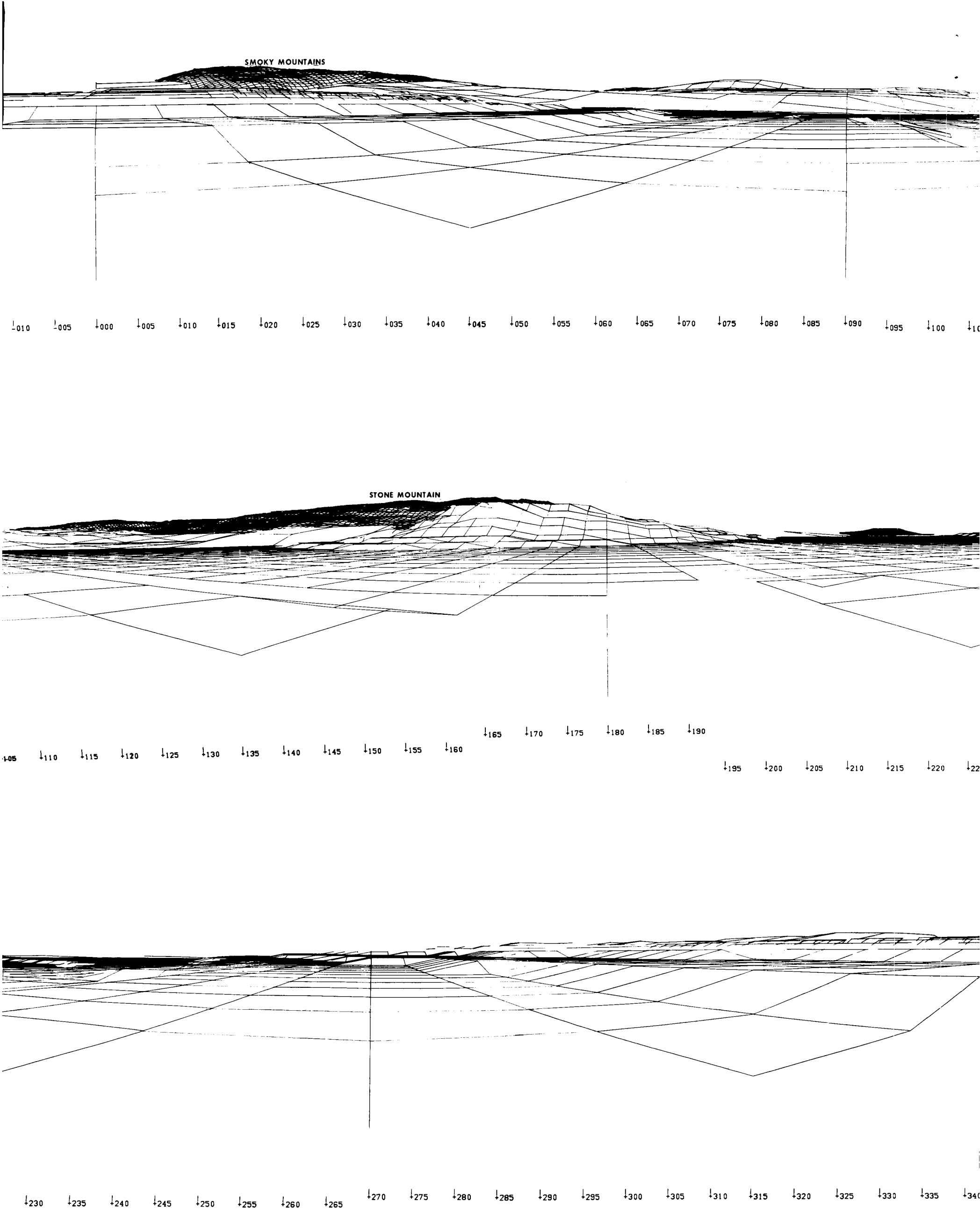


FIGURE 8 - VIEW FROM OFF NOMINAL LANDING SITE TO THE NORTH (SCENE K)

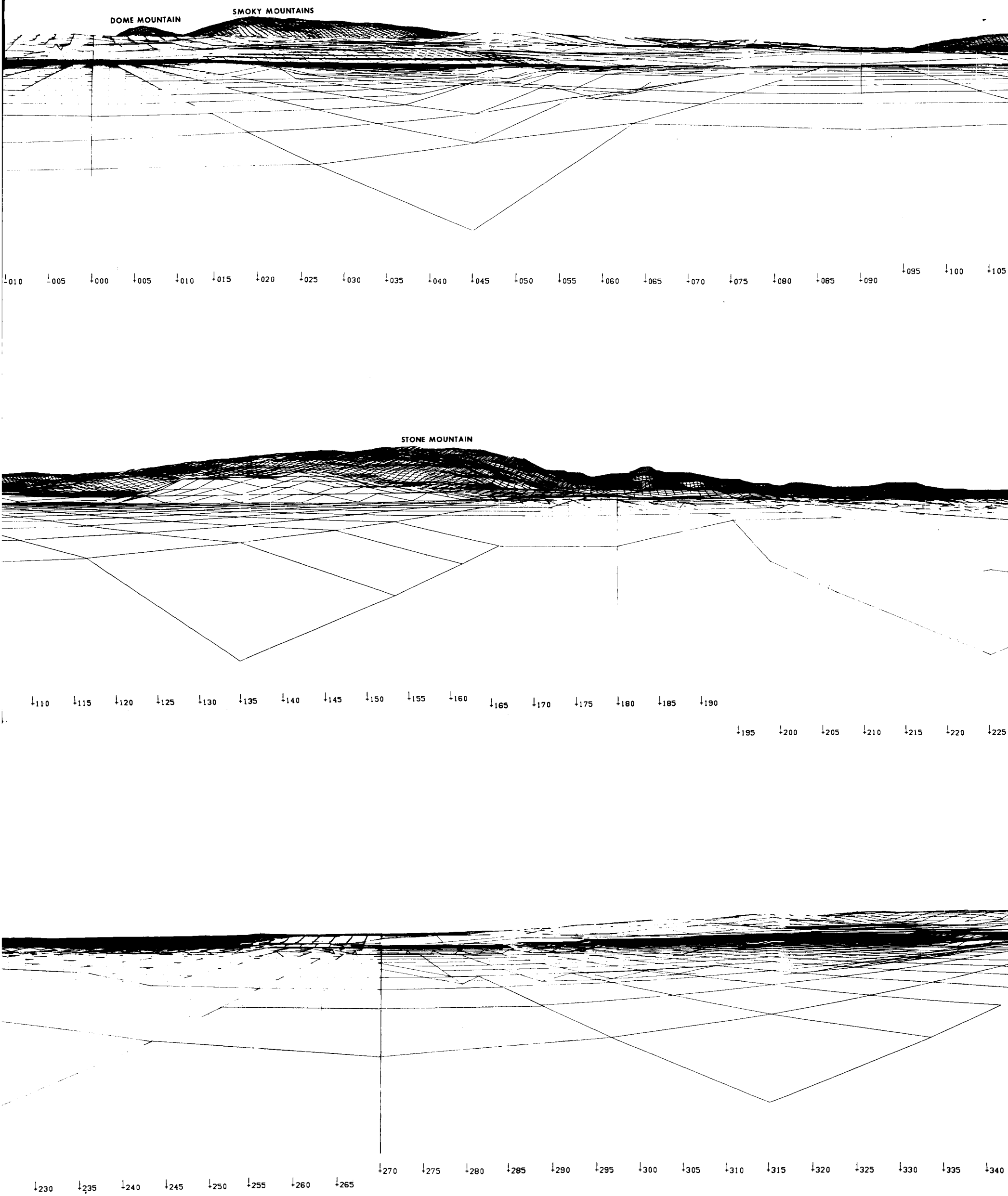


FIGURE 9 - VIEW FROM OFF-NOMINAL LANDING SITE THAT IS LONG (SCENE L)

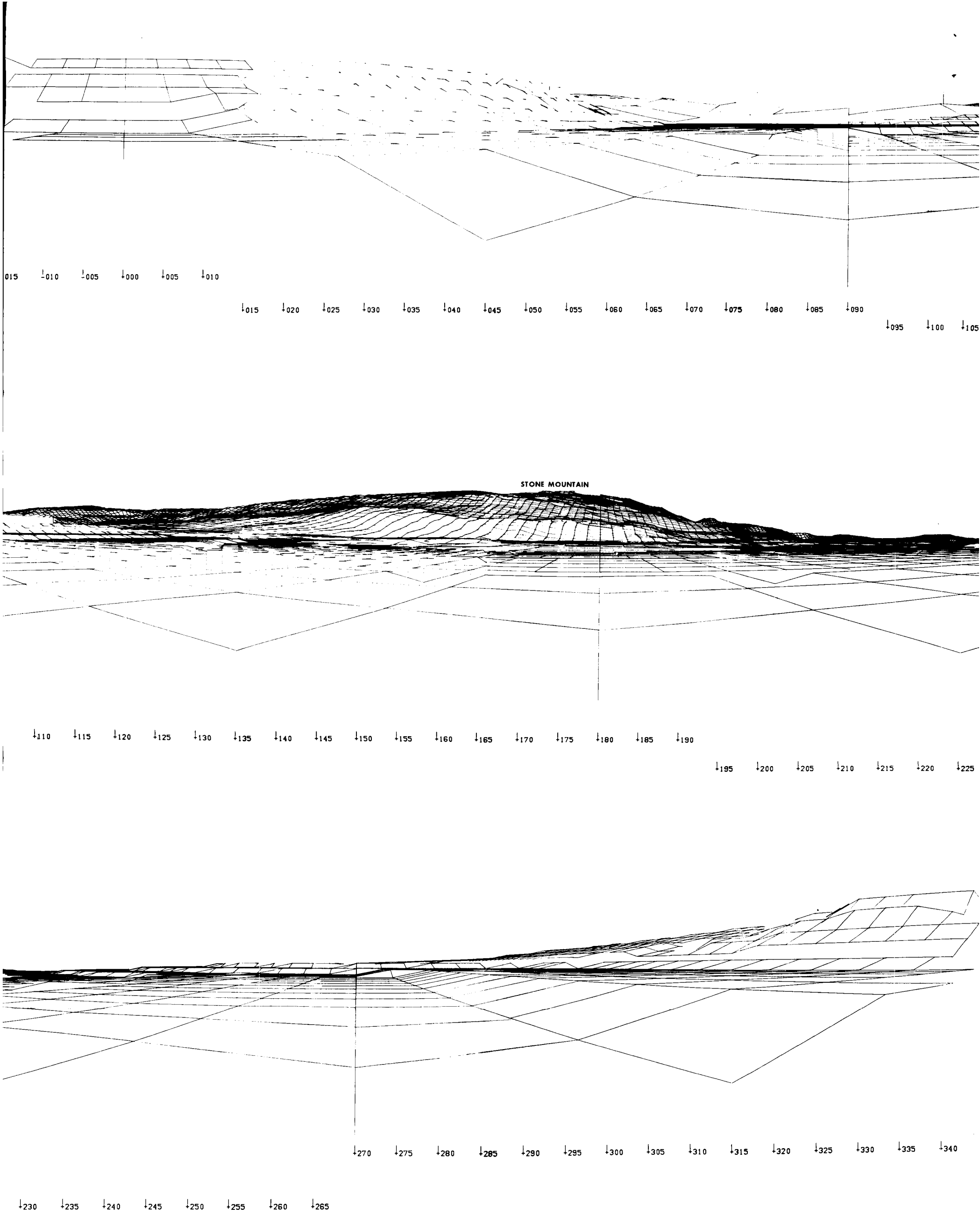


FIGURE 10 - VIEW FROM OFF-NOMINAL LANDING SITE THAT IS SHORT (SCENE M)

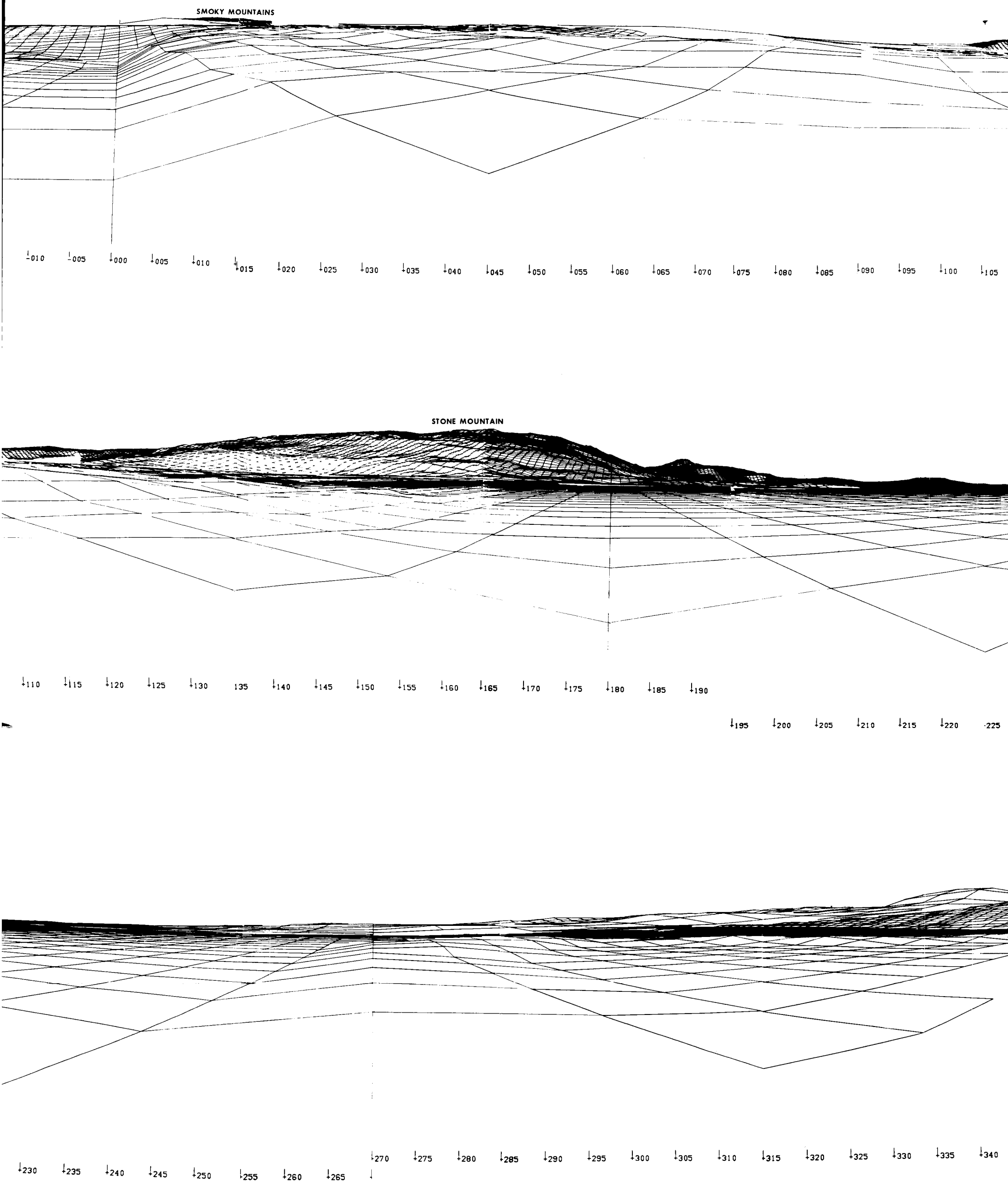


FIGURE 11 - VIEW FROM NOMINAL LANDING SITE (SCENE N)

Subject: Additional Computer-Generated Panoramas of the Descartes Terrain and an Index to All Available Scenes -- Case 310

From: G. S. Taylor

Distribution List

NASA Headquarters

J. K. Holcomb/MAO
C. H. King/MAE
C. M. Lee/MA
A. S. Lyman/MR
B. Milwitzky/MAE
W. T. O'Bryant/MAL
R. A. Petrone/MA
R. B. Sheridan/MAO
W. H. Shirey/MAL
W. E. Stoney/MAE
A. T. Strickland/MAL

Manned Spacecraft Center

R. R. Baldwin/TD3
F. V. Bennett/FM2
J. W. Dietrich/TJ3
C. M. Duke/CK
A. W. England/CB
M. P. Frank/FC
G. D. Griffith/FC9
G. L. Gutschewski/TF5
F. W. Haise/CB
C. R. Huss/FM
W. W. Jaderlund/PD4
R. H. Kohrs/PD
R. W. Kubicki/PA
J. A. Lovell/TA
T. K. Mattingly/CB
J. A. McDivitt/PA
M. C. McEwen/TF5
E. D. Mitchell/CB
L. R. Nichols/CA12
A. W. Patteson/TF5
J. M. Peacock/PD
S. A. Roosa/CB
J. H. Sasser/TF
D. Segna/PD

MSC (Continued)

J. R. Sevier/PD4
T. P. Stafford/CB
D. W. Strangway/TN4
J. W. Young/CB

Marshall Space Flight Center

O. H. Vaughan/S&E-AERO-YE

Kennedy Space Center

D. C. Bragdon/CFK
C. Floyd/CFK
J. J. Kolnick/CFK

TOPOCOM

G. C. Lawyer
S. Palmer

USGS/Flagstaff

G. G. Schaber
G. A. Swann

Cal. Institude of Technology

L. T. Silver

University of Texas

W. R. Muehlberger

Lockheed Electronics

D. P. McKay

Subject: Additional Computer-Generated Panoramas of the Descartes Terrain and an Index to All Available Scenes -- Case 310

From: G. S. Taylor

Distribution List (Continued)

Bellcomm, Inc.

R. A. Bass
A. P. Boysen, Jr.
D. A. Corey
D. A. DeGraaf
F. El-Baz
J. W. Head
E. E. Hillyard
N. W. Hinners
K. E. Martersteck
P. E. Reynolds
R. L. Wagner
All Members Department 2013
Central Files
Department 1024 File
Library

Abstract Only to

J. P. Downs
I. M. Ross
M. P. Wilson